

## IRAN'S NUKE SECRETS REVEALED

In a previous article I spoke of Iran as a prime example of the absence of meaningful information we get from our media. I examined the ethnic and religious conflicts in Iran that are seldom, if ever, addressed.

A much better known disagreement we have with Iran is its attempt to develop a nuclear weapon that would be controlled by an irrational president.

The story of Iran's development of a nuclear capability is fascinating but is practically unknown, except to those who have the time, expertise and persistence in digging for it. One of those is Edward Luttwak, a Senior Fellow of the Center for Strategic and International Studies, prolific author, contributor to prestigious journals like "Foreign Affairs" and "Commentary", and an advisor and consultant on foreign affairs to past and present administrations.

Dr. Luttwak's account of Iran's program to go nuclear should be much better known. It begins with August 1974 when the Shah announced his intention to build 23 nuclear reactors, ostensibly to supply Iran's total electricity needs. He said that this would allow Iran's oil resources to be used to produce valuable petrochemicals rather than be used as fuel. His real goal, however, was to acquire nuclear weapons. Since then, with the discovery of Iran's immense proven natural gas reserves - 812 trillion cubic feet (15% of the world's total), more than enough to cheaply generate all the electricity it needs by gas turbines - that cover story became even more incredible. In 1975, the Shah contracted with the French for enriched uranium, and engaged a consortium of German companies to build the first two nuclear reactors and generating units. In 1979, after much work had been done, the new revolutionary rulers of Iran refused to pay the overdue payment of \$450 million and the Germans abandoned the projects. Both of them had been largely completed but had been damaged by air strikes, flown by French pilots, during the 1988 war with Iraq. The Germans were then asked to return and finish their work. They refused.

Next, Iran approached the Russians. In 1995, Yeltsin, against American objections, approved the delivery of a VVER-1000 light-water reactor powered by slightly enriched uranium. The reactor was to be delivered and fitted by Iranian and Russian contractors into one of the damaged German projects.

Now, eleven years later, 2500 Russian technicians are still feverishly working at the project that is far from ready. When completed, the Russians alone will be in charge of processing the uranium rods and the U.S. no longer objects to this program.

The secret weapon-grade uranium production program by the centrifuge process is much more obscure. It began when the Pakistani, Abdul Qadeer Khan, who is regularly described as a scientist but who has never invented or developed anything. He sold Iran a complete centrifuge-technology package, which he had stolen from the European URENCO consortium. Khan, who is described as a thief and smuggler by authoritative sources, also included samples of Pakistani-made centrifuges, full-scale plans for production facilities and the blueprints for a cannon-type uranium bomb that Pakistan had received from China.

In 1996, after the U.S. successfully objected to the sale of a complete plant, China sold Iran plans for a conversion plant that had not been included in Khan's package. It has now been built, near Isphahan. It is operational and appears to have been tested but could be incapacitated by fewer than twelve 1000-pound bombs.

Centrifuges were the most important part of the Khan package. They were the somewhat outmoded aluminum and steel models derived from a 1957 German design that was based on aluminum centrifuges developed in post-war USSR by German scientists.

The U-235 uranium isotope is only 1.26% lighter than the mass of U-238 – natural uranium. U-235 is extracted by using extremely fast centrifuges revolving at 1500 revolutions per second – 100 times the speed of a washing machine. The centrifuges must operate in a vacuum in order to reduce the friction that would melt it. It is extremely susceptible to breakdowns.

If based on the design currently used in Iran, at least 1000 centrifuges would have to work around the clock for at least a year to produce enough U-235 for a single bomb!

The 1000 centrifuges would have to be produced and installed and they must not break down. When, in November 2003, the International Atomic Energy

Agency (IAEA) shut down the cascade of 164 centrifuges already in Iran, *a fully 1/3 of them crashed!*

On the other hand, some of the problems in producing U-235 were overcome when mostly German and Swiss firms eagerly sold high strength aluminum and steel, electron- beam welders, vacuum pumps, and other highly sophisticated machine tools for the production of centrifuges. The Europeans also trained Iranians in the manufacturing of centrifuges whose only purpose could be to enrich U-235. The IAEA inspectors read and photographed all the equipment whose labels no one had bothered to remove.

To sum up, the regime is unable to produce nuclear weapons in less than three years and may not be able to do so even then because of the many difficulties that must be overcome.

In addition to the social and nuclear difficulties there are other aspects to the Iranian problem, which I will discuss, in my next column.